

## 7. Conference of Applied Hygiene and Microbiology and Virology

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Dr. Gudrun Westermann

Organized by the Dr. Brill Academy, the 7th Conference of Applied Hygiene and Microbiology and Virology took place on November 25th -26th. The event, which some participants were able to attend in person in Hamburg was held in English language. **Prof. Andreas Widmer** from Basel gave the introductory lecture and reflected the year in terms of infection control. He elaborated on the origin and spread of SARS-CoV-2, saying that after the 1st, 2nd and 3rd waves, there will probably be a "continuous wave". The virus will not disappear - on the contrary - others with similar origin and spread could follow. Using the Swiss cheese model, Widmer made clear that individual measures are of no use. Rather, intervention must take place at several levels to reduce the overall danger as much as possible by adding up the effects.

**Prof. Jörg Steinmann** from Nuremberg spoke about antimicrobial and diagnostic stewardship. Using the example of diagnostic tests in pneumonia, he explained how rapid tests can contribute to therapy decisions. The presence and the close cooperation with an antimicrobial stewardship team is important - otherwise the test results will not be transferred to everyday clinical practice. In antibiotic therapy, he said, it is important to look at the individual patient and his risk factors and decide whether an infection is the cause of his condition. Antibiotics should then be given in appropriate doses and early, according to the principle of "hit hard and early," but should also be changed or discontinued as new findings emerge.

**Henrik Gabriel** reported on the activity of disinfectants against *Candida auris*. *C. auris*, unlike all other *Candida* species, is regularly transmitted from patient to patient in hospitals and causes nosocomial outbreaks. In addition, *C. auris* is usually resistant to fluconazole and may also develop resistance to other antifungal agents (especially echinocandins). Significant resistance to disinfectants, such as ethanol and DDAC, has also been demonstrated for individual strains.

**Prof. Günter Kampf** gave an update on surface disinfection. Resistance has already been described for some substances frequently used for this purpose, such as DDAC and benzalkonium chloride. Especially gram-negative organisms seem to adapt and develop resistances. In this respect, antiseptic stewardship is also becoming increasingly important. Kampf mentioned biofilms on basically dry surfaces as a topic for the future; these are probably more widespread than assumed and may contain Gram-negative bacterial species with relevance for nosocomial infections. Probiotic cleaners are a new approach and have shown promising initial results.

**Prof. Ojan Assadian** from Vienna spoke about air, which is often overlooked as a medium of infection transmission. Assadian pointed out that CO<sub>2</sub> concentration is not a suitable indicator of air quality. Furthermore, it is not clear to what extent CO<sub>2</sub> concentration correlates with the concentration of potentially infectious particles or aerosols. Various companies are currently trying to find a solution to the COVID-19 transmission problem. The term "air disinfection" is not correct, because only surfaces of particles are disinfected in the air. For air treatment methods, there are no standards or even consensus regarding research results. In this respect, it does not make sense to rely on such devices at the moment.

**Dr. Florian Brill** opened the second day of the congress with his keynote lecture on the development of efficacy testing for disinfectants and antiseptics until 2026. He presented the goals of the CEN TC 216 working group, including the development of a strategic plan until 2030. There are still deficits in testing methods for disinfectants - only a few working groups in Europe are working on this, Brill explained. Accordingly, multicenter

studies are important and strengthen the competence of individual laboratories. Interested laboratories are still being sought.

**PD Dr. Johannes Blümel** of the Paul Ehrlich Institute spoke about virus safety of medical devices (MD). If virus particles have penetrated the raw material of MD, removal is very difficult. Blümel described the combination of detergents with solvents, which works well against all enveloped viruses, but not against non-enveloped viruses. Pasteurization works well against both enveloped and non-enveloped viruses, although exact maintenance of a homogeneous temperature is important. Virus aggregates must also be prevented by prefiltration. Other methods include irradiation (UV-C or gamma rays) or inactivation by dry heat.

**Dr. Patrick Behrendt** from Hannover reported on resistance to ethanol-based hand disinfectants in hepatitis E virus (HEV). He demonstrated that infection numbers for HEV significantly increased in recent years and looked at the efficacy of different disinfectant formulations. HEV is often particularly resistant to alcohol-based formulations because ethanol promotes the release of the unenveloped, even more infectious virus particles; he pointed out that phosphoric acid is a key ingredient in HEV-effective disinfectants.

The cultural sector remains constrained by the pandemic. What happens to air quality when an orchestra plays?

**Birte Knobling** from Hamburg presented data on air testing, especially particle and aerosol release. Bacteria counts, especially skin flora, increase significantly as soon as people are on stage. Playing wind instruments also increases exposure to germs of the oral flora. The investigation methods tested here allow a more precise risk assessment in large groups of people and regarding the individual risk of each instrument.

**Toni Luise Meister** presented recent progress in the inactivation of SARS-CoV-2. She described studies on commercially available mouthwashes. Individual components were also studied. Most effective were cetylpyridinium chloride, benzalkonium chloride, and polyvidone iodine. Interestingly for dentistry, H<sub>2</sub>O<sub>2</sub> proved to be ineffective.

The last session was devoted to biocide legislation. Here, the focus was on current developments and experiences with the registration of biocidal products and, especially, on product families (BPF). **Dr. Roland Knieler** gave an overview of the pitfalls of the registration process. He pointed out that it is quite challenging to elucidate which ingredients are considered core substances and which are considered extensions. **Dr. Gunnar Kleist**, Hamburg, reported on his experience with BPF authorization for the EU and gave advice on which points need special attention to enable a smooth procedure. Critical points should be addressed early, and open questions clarified. Gaps in data can lead to hectic and stress later in the process, Kleist emphasized. **Dr. Franziska Breuer**, Fraunhofer ITEM, Hannover, gave advice on risk management. She pointed out that risk characterization and classification must be done for each ingredient. For many "Substances of Concern (SoC)", this can increase the effort considerably. **Ariane Zwintscher**, also from Fraunhofer ITEM, spoke about endocrine disruptors (EDs). These are endocrine active substances. They are mainly found in synthetically produced materials, such as solvents. Endocrine effects are divided into estrogenic, androgenic, thyroid, and steroidogenic (EATS) effects. The OECD framework for the assessment of potential endocrine effects calls for various information at five levels (1-5), including results of *in vitro* and *in vivo* studies on mechanisms of action and adverse effects. Zwintscher pointed out that if an ED is present in a product, it is unlikely to be approved for use by the public. To that extent, manufacturers should choose their additives wisely and avoid SoC whenever possible.

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